

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Giant magnetostrictive material whose dimensions vary at an application of an external magnetic field thereon, comprising:

a mother alloy consisting essentially of a rare earth element and a transition ~~element~~ metal and having a composition represented by the formula:



wherein R denotes at least one element selected from rare earth elements including Y,
wherein T denotes at least one element selected from the group consisting of Fe, Co and Ni,
wherein M denotes at least one element selected from transition elements other than Fe, Co
and Ni, and wherein X and Z are numbers satisfying $0.5 \leq X \leq 1$ and $1.4 \leq Z \leq 2.5$,
respectively; and

nitrogen contained in the mother alloy;

wherein the nitrogen comprises an interstitial nitrogen interstitially dissolved in the mother alloy and a nitride-forming nitrogen in the mother alloy, a ratio of a content of the nitride-forming nitrogen to a total content of the nitrogen contained in the mother alloy being in the range 0 to 0.05 by mass ratio.

2. (Previously Amended) The giant magnetostrictive material as set forth in claim 1:

wherein the total content of the nitrogen in the mother alloy is in the range from 0.01 to 2.5% by mass.

3. (Previously Amended) The giant magnetostrictive material as set forth in claim 1:

wherein a dispersion of values of the content of the Interstitial nitrogen in the mother alloy is, with respect to an average value of the content of the interstitial nitrogen, within $\pm 30\%$.

4. (Previously Amended) The giant magnetostrictive material as set forth in claim 1:

wherein a lattice constant of a grain of the mother alloy with the interstitial nitrogen is larger than a lattice constant of a grain of the mother alloy without the Interstitial nitrogen by 0.1 % or more.

5. (Original) The giant magnetostrictive material as set forth in claim 1:

wherein the giant magnetostrictive material comprises unidirectionally solidified material, single crystal material, melt quench material or sintered material.

6. (Previously Amended) The giant magnetostrictive material as set forth in claim 1:

wherein the giant magnetostrictive material comprises isotropic cast material.

7. (Previously Amended) The giant magnetostrictive material as set forth in claim 1:

wherein the giant magnetostrictive material comprises an alloy thin film formed by a film deposition process.

8. (Previously Amended) The giant magnetostrictive material as set forth in claim 5:

wherein, in 80 % or more by volume of grains in the alloy, a crystallographic direction in a direction of an applied magnetic field is oriented within ± 45 degrees from a crystallographic direction of $\langle 111 \rangle$ or $\langle 110 \rangle$.

9. (Cancelled)

10. (Original) The giant magnetostrictive material as set forth in claim 1:

wherein an oxygen content of the mother alloy is 20000 ppm or less.

11. (Original) The giant magnetostrictive material as set forth in claim 1:

wherein a total content of fluorine and chlorine in the mother alloy is 200 ppm or less.

12. (Previously Amended) The giant magnetostrictive material as set forth in claim 1:

wherein the giant magnetostrictive material comprises at least one element selected from the group consisting of hydrogen, boron, carbon, phosphorous and silicon in the range from 0.0001 to 3% by mass.

13. (Original) The giant magnetostrictive material as set forth in claim 1:

wherein the giant magnetostrictive material has magnetostriction of 200 ppm or more.

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Currently Amended) A method for manufacturing giant magnetostrictive material, comprising the steps of:

preparing a mother alloy having a composition represented by the formula:



wherein R denotes at least one element selected from rare earth elements including Y,
wherein T denotes at least one element selected from the group consisting of Fe, Co and Ni,
wherein M denotes at least one element selected from transition elements other than Fe, Co
and Ni, and wherein X and Z are numbers satisfying $0.5 \leq X \leq 1$ and $1.4 \leq Z \leq 2.5$,
respectively;

heat treating [a] the mother alloy [~~consisting essentially of a rare earth element and a transition metal element~~] in an atmosphere of vacuum or an inert gas; and

introducing nitrogen interstitially between crystal lattice of the mother alloy to form an interstitial solid solution in a temperature range of 600°C or less.

24. (Previously Amended) The method for manufacturing giant magnetostrictive material as set forth in claim 23:

wherein in the nitrogen introducing step the nitrogen is introduced such that a total content of nitrogen contained in the mother alloy is in the range from 0.01 to 2.5% by mass, and a ratio of a content of nitrogen forming a nitride in the mother alloy to the total nitrogen content of nitrogen in the mother alloy is 0.05 or less by mass.

25. (Original) The method for manufacturing giant magnetostrictive material as set forth in claim 23:

wherein the nitrogen introducing step comprises a step of heat treating the mother alloy in an atmosphere containing nitrogen at a temperature in the range from 200 to 600°C.

26. (Original) The method for manufacturing giant magnetostrictive material as set forth in claim 23:

wherein the nitrogen introducing step comprises a step of mechanical alloying the mother alloy in an atmosphere containing nitrogen.

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

33. (Original) A magnetostrictive actuator comprising:

giant magnetostrictive material as set forth in claim 1.

34. (Cancelled)

35. (Original) A magnetostrictive sensor comprising:
giant magnetostrictive material as set forth in claim 1.

36. (Cancelled)

37. (Previously Added) A giant magnetostrictive material comprising:
a mother alloy consisting essentially of a rare earth element and a transition element,
wherein the mother alloy comprises a Laves phase as a primary phase; and

nitrogen present in the alloy,

wherein the nitrogen comprises (I) an interstitial nitrogen interstitially dissolved in the
mother alloy and (ii) a nitride-forming nitrogen in the mother alloy, and

wherein a ratio of a content of the nitrogen-forming nitrogen to a total content of the
nitrogen contained in the mother alloy lies in the range of 0 to 0.05 by mass ratio.